

treated with surgical debridement followed by antibiotics, with removal of implants on 3 occasions.

**Conclusions:** Propionibacterium Acnes is a normal skin commensal with a high incidence of infection in elective upper limb surgery. Decolonisation of the surgical field prior to surgery may reduce deep infection rates. Chlorhexidine (2%) is known to be effective against Propionibacterium Acnes. Recommendation has included routine surgical field preparation using 2% chlorhexidine scrub. Further studies have been planned to identify the most effective method of decolonisation. Re-audit will be performed in 12 months time.

### 1183: EXPLOITING PHOSPHONATE CHEMISTRY TO PRESENT BIOMOLECULES AT THE ORTHOPAEDIC IMPLANT INTERFACE

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**Introduction:** Altering a joint replacements surface chemistry can present active biomolecules to osteoblasts, increasing cell attachment and bone formation resulting in enhanced implant fixation. We aimed to couple peptide AC-100, a protein that stimulates new bone formation, to synthesised aminobisphosphonic acid (AMB), a chemical which binds strongly to titanium, and analyse its effect on cell attachment and cell morphology on titanium disc surfaces compared to both positive and negative controls.

**Methods:** AMB was synthesised, absorbed onto titanium discs and coupled to peptide AC-100. Positive and negative control surfaces were produced using fibronectin and PBS respectively. Cells were placed onto each surface, incubated overnight, fixed, stained and photographed. For each surface, the number of cells attached and the average cell area was calculated using ImageJ software and compared using ANOVA.

**Results:** AMB was successfully synthesised and purified as confirmed by NMR spectroscopy. Peptide AC-100 surfaces demonstrated significantly greater cell attachment and cell area than the PBS control ( $p < 0.05$ ) but significantly lesser than the fibronectin control ( $p < 0.05$ ). This could be due to the peptide not immobilising as well as anticipated. The titanium disc surface changes need to be quantified.

**Conclusions:** Peptide AC-100 coupled to AMB on the surface of titanium implants has the potential to enhance implant fixation.

### 1201: COMPLICATIONS ASSOCIATED WITH PARALLEL PLATING TECHNIQUE FOR THE OPERATIVE TREATMENT OF COMPLEX DISTAL HUMERAL FRACTURES

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**Introduction:** To assess post-operative complications and outcome of distal humeral fractures treated with parallel plating in our institution.

**Methods:** A retrospective case note and radiographic review was conducted for patients undergoing surgery within a 4-year period.

**Results:** 37 distal humeral fractures underwent internal fixation with a parallel plating technique. 3 patients required external fixation acutely before definitive fixation. Union of 35 of the 37 fractures was achieved, 1 non-union required revision fixation with bone grafting. The post-operative soft tissue infection rate was 13.5%. Of 15 patients that underwent olecranon osteotomy, 6 developed prominence or failure of metalwork at the olecranon; 5 requiring removal or revision. 2 patients developed early osteoarthritis and required total elbow replacement. One patient developed a post-operative ulnar nerve palsy, which did not recover. 33 patients regained full functional range of pronation / supination and the mean flexion / extension arc was 86.5 degrees.

**Conclusions:** Stable fixation and a high rate of union of complex distal humeral fractures can be achieved when a parallel internal fixation surgical technique is utilised. The olecranon osteotomy approach confers a high complication rate, requiring surgical re-intervention. Despite superior exposure using this approach alternative approaches should be considered due the associated morbidity.

### 1212: THE CLINICAL AND RADIOGRAPHIC OUTCOMES USING PATIENT-SPECIFIC INSTRUMENTATION (PSI), COMPUTER-ASSISTED SURGERY (CAS) AND MANUAL INSTRUMENTATION IN PATIENTS UNDERGOING KNEE ARTHROPLASTY: A CRITICAL SYSTEMATIC REVIEW

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**Introduction:** Surgical precision greatly influences outcomes knee arthroplasties. The traditional jig-fit model can compromise implant placement and is associated with complications. Recently, patient-specific instrumentation (PSI) is becoming more studied. PSI involves the use of preoperative advanced imaging techniques with real-time prototyping technology to create patient-matched cutting guides which are reverse engineered to reverse glove fit onto the femur and tibia. In this first written systematic review we evaluate studies which compare the clinical and radiographic outcomes following knee arthroplasty with PSI, computer-assisted surgery (CAS) and manual instrumentation.

**Methods:** We searched PubMed, MEDLINE, ScienceDirect, Scopus, The Cochrane Library, EMBASE and CINAHL for articles until January 2014. We included 7 studies from CEBM levels 2-5, and excluded 22 that did not meet the inclusion criteria or funded commercially.

**Conclusions:** PSI improves the accuracy in coronal alignment compared with standard instrumentation. It can potentially improve the efficiency of high and low-volume surgeons by decreasing operative time (up to 21 steps) and resources. However, questions remain about whether PSI leads to a significant improvement in the functional and clinical outcome of a variety of patients. In addition, PSI may not be cost-effective in the short-term although it has the potential to decrease fixed costs over time.

### 1230: PREOPERATIVE PAIN CATASTROPHISATION PREDICTS HIGHER PAIN AND ANALGESIA USE DURING PRIMARY HIP ARTHROPLASTY

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**Introduction:** Postoperative pain in orthopaedic operations is associated with reduced patient satisfaction, delayed discharge and increased costs. This study investigates the short-term association between psychological disorders and pain-related beliefs (pain catastrophising [PC], depression and anxiety) and postoperative pain.

**Methods:** Prospective level II cohort study compared 90 patients undergoing a primary THA for osteoarthritis, mean age 64y (49-77). Patients completed the Pain Catastrophising Scale (PCS), Hospital Anxiety and Depression Scale (HADS), Verbal Rating Scale (VRS) and Oxford Hip Score (OHS) preoperatively and at 48 hours postoperatively. PC patients had significantly poorer hip function and lower OHS (mean 18.5 versus 27.2 in non-PC patients,  $p < 0.05$ ).

**Results:** PC patients required significantly greater analgesia post-operatively. In the adjusted multiple regression analysis, postoperative pain intensity was predicted by a higher level of preoperative pain intensity (dichotomized above median;  $b = 2.15$ , 95% CI: 0.37-3.92) and a higher score on the preoperative PCS ( $b = 1.79$ , 95% CI: 0.67-3.13). Anxiety, depression, and PCS was not significantly different perioperatively.

**Conclusions:** Pain catastrophisation is an important independent predictor of postoperative pain intensity in patients undergoing hip arthroplasties. This knowledge can help the multi-disciplinary-team to significantly improve perioperative pain management. It can also be used to re-shape care protocols, e.g. Enhanced Recovery Programme.

### 1253: ROTATOR CUFF INJURY FOLLOWING SHOULDER DISLOCATION: INVESTIGATION AND MANAGEMENT

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**Introduction:** In patients over 40yrs old, shoulder dislocation has been particularly associated with rotator cuff tears, with incidences varying between 30-50%. The aim of this study was to examine the incidence and management of potential rotator cuff injuries after dislocation.

**Methods:** All patients who sustained a shoulder dislocation between August 2010-August 2012 were included. Patients with shoulder metalwork and humeral fractures were excluded. Data was collected on demographics and clinical and operative outcome.

**Results:** 161 patients sustained a shoulder dislocation. Of these, 50 patients were over 40years old and met inclusion criteria. Age range was 40-87years, with 58% being male. Rate of clinical tear increased with age. Highest rate of rotator cuff imaging occurred between 55-70years, with 76% patients having USS and/or MRI performed. No patient outwith this